REMARKS

Claims 1-7 are pending in this application.

Claims 1-7 are rejected

The office action dated July 3, 2002 indicates that claims 1 and 7 are rejected under 35 U.S.C. §103 as being unpatentable over Acharya et al. U.S. Patent No. 6,348,929 in view of Deffontaines et al. U.S. Patent No. 5,461,503; and claims 2-6 are rejected under 35 U.S.C. §103 as being unpatentable over Acharya et al. and Deffontaines et al. in further view of Juenger et al. U.S. Patent No. 5,778,106. The '103 rejections have been rendered moot by the cancellation of claims 1, 2 and 7.

Claims 8-20 have been added to the application. Claim 8 recites a method of processing a digital image produced by an optical system including a sensor that detects less than full color at each pixel location. The method comprises accessing an operator including an array of weights, values of the weights determined by at least one property of the optical system matrix; forming a plurality of input vectors from the image, each input vector including a plurality of pixel intensities; and applying the operator to the input vectors to produce a full color digital image.

None of the cited documents teach or suggest an operator including an array of weights whose values are determined by at least one property of the optical system. The office action acknowledges that neither Acharya et al. nor Deffontaines et al. suggest this limitation. However, the office action contends that Juenger et al. disclose this limitation in a passage at col. 10, lines 5-35. The contention is incorrect. In the passage Juenger et al. merely disclose transforming a demosaiced image from one aspect ratio and resolution to another aspect ratio and resolution.

Thus Juenger et al. do not teach or suggest the differences between claim 8 and the combined teachings of Acharya et al. and Deffontaines et al. Accordingly, claim 8 should be allowed over the documents made of record.

Claims 3-6 have been amended to depend from claim 8. Added claims 9-17 also depend from claim 8.

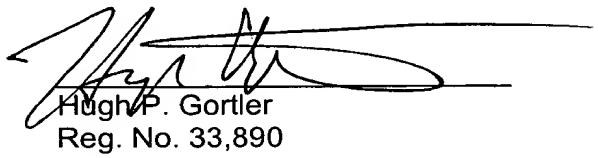
Claim 18 recites a method of generating a transformation matrix for demosaicing a digital image. The method comprises using camera parameters to design coefficients for the transformation matrix. This claim, and its dependent claims 19-20, should also be allowable because Juenger et al. do not teach or suggest using camera parameters to generate coefficients of a demosaicing operator.

The specification has been amended to correct some typographical errors. The examiner is thanked for pointing out these errors. No new subject matter has been added.

A petition for a ONE month extension of time is enclosed. The petition extends the shortened period for response to November 4, 2002 (since Nov. 3 fell on a Sunday). Authorization to charge the petition fee is provided in the attached transmittal letter.

The examiner is respectfully requested to withdraw the rejections of the claims and issue a notice of allowability. If any issues remain, the examiner is invited to contact the undersigned.

Respectfully submitted,



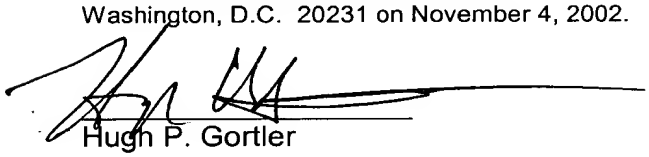
Hugh P. Gortler
Reg. No. 33,890

Hewlett-Packard Company
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

(949) 454-0898

Date: November 4, 2002

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231 on November 4, 2002.



Hugh P. Gortler

VERSION WITH MARKINGS TO SHOW CHANGES MADE

These conditions are satisfied by any image sensor having a sensor pattern that is constructed by repeating a kernel of sensing elements. For example, one common image sensor array is based on the Bayer pattern, which is generated by repeating a 2x2 sensor array kernel having two green sensors, one red sensor, and one blue sensor. This pattern is shown in Figure 1 at 10. The kernel is shown at 12. Such an image sensor may be viewed as having 4 four planes shown at 14-17, two green planes 14 and 17, one red plane 16, and one blue plane 15. The sampling interval is the area originally occupied by the kernel. Each of the planes is offset with respect to the other planes. It can be shown that any regular sampling lattice can be decomposed into a set of image planes satisfying the above conditions.

In the method of the present invention, it is assumed that each polyphase output vector depends on a finite number of input super pixels. In general, the input super pixels that contribute to a particular polyphase output vector $\xi[n]$ will be located in a neighborhood around **[n]**. As will be explained in more detail below, the precise pixels will depend on the nature of the camera and imaging optics. The input super pixels that contribute to the polyphase output vector at **[n]** may be identified by a set of displacement vectors $\mathbf{k}_1, \mathbf{k}_2, \ldots, \mathbf{k}_K$. That is, $\xi[\mathbf{n}]$ depends on $\mathbf{x}[\mathbf{n}+\mathbf{k}_1], \mathbf{x}[\mathbf{n}+\mathbf{k}_2], \ldots, \mathbf{x}[\mathbf{n}+\mathbf{k}_K]$. In the method of the present invention, $\xi[n]$ is assumed to be linearly dependent on the input super pixels. In the preferred embodiment of the present invention, the set of displacement vectors $\mathbf{k}_1, \mathbf{k}_2, \ldots, \mathbf{k}_K$ is independent of **[n]**, and is arranged in a $k_1 \times k_2$ rectangular grid.

3. The method of Claim ~~2~~ 8, wherein the system also includes a lens system, and wherein the at least one ~~said~~ property is ~~the~~ focal length of said lens system.

4. The method of Claim 8, wherein the system also includes a lens system, and~~2~~ wherein said property is ~~the~~ f-number of ~~said~~ the lens system.

5. The method of Claim ~~1~~ 8, wherein the ~~said linear~~ operator ~~transformation~~ depends on a ~~the~~ source of illumination used to generate ~~said~~the ~~first~~ image.

6. The method of Claim ~~1~~ 8, wherein said ~~linear transformation~~ operator depends on the type of scene captured in the ~~said first~~ image.